an elaborate slide-rest, a dividing engine, a wheel-cutting machine, and even a small smith's forge, and there contrived and constructed various machines of great ingenuity. Chief among these were Mr. Stanistreet's A[1] clock, described and figured in the *English Mechanic* of March 8, 1872; and his micro-ruling machine, described and figured in the monthly journals of the Liverpool Microscopical Society for September and December 1871. The smallness, and regularity of rate, of the A[1] clock, in very unequal temperatures, was really a marvel. The compensation seemed perfect, and it is but inadequate praise to say that its going rivalled that of the best chronometers usually tested at the Royal Observatory.

Mr. Stanistreet's health, however, continued to decline, and after several attacks, from which his recovery seemed doubtful, he finally succumbed on the 17th of April, 1873. W. L.

Professor Giovan Battista Donati was born at Pisa, on December 16, 1826, and was the son of Dr. P. Donati, of that city. After his preliminary studies at the University of Pisa, where he had for his tutor our late Associate, M. Mossotti, he devoted himself to the special study of mathematics, and to original analytical researches. On August 1, 1852, he was appointed to the Observatory of the Museum of Natural History, at Florence, which at that time was under the direction of Professor Amici. In October 1854 he was made an *aide-astronome*; and on September 29, 1858, the title of *astronome-adjoint* was conferred upon him, in consideration of the discovery by him of the magnificent comet which still bears his name.

At this time Donati had already attracted the attention of astronomers out of his own country by his cometary observations, the results of which had been inserted in various scientific publications, including the *Monthly Notices*, where his name first appears as an observer and discoverer of comets in 1855. His fortunate discovery of a small telescopic comet on June 2, 1858, which ultimately became the remarkable comet of that year, brought him at once into general notice. From being a comparatively obscure observer, Donati found himself suddenly the astronomical hero of the day, for his brilliant comet not only formed an interesting subject for intelligent study, on account of the various speculations as to its physical constitution, but it also created for a time a lively taste for astronomy among all classes of the community. Fortunately, Donati's zeal as an observer did not allow him to remain satisfied with the honour he had so unexpectedly attained, for we find him continuing with increased energy as an assiduous observer of comets and other astronomical phenomena. On December 22, 1859, he was appointed Professor of Astronomy and Director of the Observatory.

On taking charge of the Observatory, Prof. Donati's first thoughts were directed to the advisability of constructing a new Observatory at Florence, because the situation of the building,

owing to the glare of the street-lamps and the continual vibration produced by passing vehicles, was not adapted for delicate observations of precision. Donati himself alluded to this defect in the position of his Observatory at a meeting on the subject of the Great European Triangulation, held at Berlin, in 1864. He was then most anxious that a new national Observatory for Italy should be erected, to take rank with the principal observatories of other countries, and his aim was to have the direction of an establishment which could be adapted to the present requirements of astronomy and terrestrial physics. To attain this object he laboured hard for many years, and it was a great day for science at Florence when, on October 27, 1872, the new Observatory at Arcetri was solemnly inaugurated with great ceremony, although, from the effects of an accident, Donati was unable to be present.

The original researches of Prof. Donati, which have eminently contributed to enrich astronomical knowledge with many new ideas and discoveries, embrace the four following subjects: Comets, Stella Spectra, Scintillation of Stars, and the Aurora Borealis. The observation of comets was, however, that which above all others was most attractive to him. From the commencement of his astronomical career to the end of the year 1864 he was the discoverer of six comets, on the following dates: June 4, 1854; June 3, 1855; November 10, 1857; June 2, 1858; July 23, 1864; and September 9, 1864.

Prof. Donati paid considerable attention to spectroscopic observations, and his labours in this branch of astronomy are well known by his important work, contributed in 1860 to the Museum of Florence, "Intorno alle strie degli Spettri Stellari," and continued in Vol. XV. of the *Nuovo Cimento*, 1862, and in the *Annali del Reale Museo di Fisica e Storia Naturale di Firenze*, 1865, New Series, Vol. I.

The experience gained by Donati from his observations of the spectra of the stars induced him to study the phenomena observed in their scintillation, and his more than usual clearness of conception enabled him to give an explanation of the causes which produce scintillation which he considered to be a true solution of the question, and in conformity with the views of Alhazen, who attributed the phenomenon to the variations in the atmospheric refraction.

Already Donati, in the first year of the existence of his new Observatory, had commenced a series of Notes, commencing with an account of some observations of the luminous phenomena of the great aurora of February 4 and 5, 1872. He deduced from the observations a general corollary that the phenomena observed during this great aurora were a series of successive formations from the east to the west, proportional to the difference of the longitude between the various stations from which they were observed, and consequently that they had a movement strictly connected with the apparent motion of the Sun. Admitting this fact, Prof. Donati was constrained to believe that the luminous

appearances of this aurora could not have been derived from a purely terrestrial, meteorological, or electro-magnetical phenomenon, but that they had a cosmical origin. Hence he has considered that these facts really belong to the domain of a new science, to which he has given the name of "Cosmical Meteorology."

In 1860 Donati published two papers under the title of "Memorie Astronomiche," one on the striæ of stellar spectra, mentioned above, and the second giving an account of his observations of the total eclipse of the Sun, made at Torreblanca, in Spain, in the year 1860. He was elected an Associate of this Society on November 11, 1864.

While on his return-journey from a visit to Vienna in September last, as the representative of his Government at the International Meteorological Congress, held in that city, Prof. Donati was attacked with Asiatic cholera. Although he was very ill at Padua, he was enabled to return to his home and family at Florence, but within a few hours afterwards he succumbed to the disease, deeply regretted by his numerous friends and co-workers in science. His death took place on the early morning (0.30 a.m.) of September 20, 1873, in the forty-seventh year of his age, at his residence, near the new Observatory at Arcetri, which he had laboured so long to establish, and which, it is hoped, will be his appropriate memorial for many generations.

E. D.

Matthew Fontaine Maury, the distinguished hydrographer, was born in Spottsylvania County, Virginia, on January 14, 1806. He was of French extraction. At an early age his parents removed into the neighbouring State of Tennessee, where young Maury received his education, but he ever retained a deep attachment for his native State. He first obtained a commission in the United States Navy as midshipman on board the *Brandywine*, at the age of sixteen; and in 1825 he was appointed to the *Vincennes* sloop-of-war, which had been commissioned for a four years' voyage, intended to include the circumnavigation of the globe, thus giving him an opportunity of improving his taste for observation in many climes and regions. After the return of the *Vincennes*, Maury served as "master" of the *Falmouth*, a ship stationed in the Pacific. It was during the many leisure hours which occurred on his four years' voyage in the *Vincennes* that he commenced his *Treatise on Navigation*, which afterwards became the adopted text-book on that subject in the United States Navy. After serving for a short time in the *Falmouth*, he was promoted to a lieutenancy on board the frigate *Potomac*, where his great knowledge of seamanship and his great scientific acquirements obtained such notice that he was selected in 1836 to accompany Captain Jones on an exploring expedition as director of the astronomical department. Owing, however, to some unforeseen circumstances, neither Maury nor Captain Jones sailed in the